

### **ABSTRACT**

Circuits and methods are provided for operating a transistor as rectifier based upon the detected Vds of the transistor. In sensing the Vds voltage of the SRMOS, during positive conduction, the SRMOS body diode will conduct and the Vds of the SRMOS becomes that of a forward body diode voltage, which may, depending on the type of the device, be approximately - 0.6V. If this voltage level is sensed, it may indicate that the SRMOS is turned off too early. During reverse conduction, Vds is non-existent (which is similar to a diode). In this case, the SRMOS may be turned off too late. Thus, by examining Vds, the SRMOS can be operated in such a manner so that it is turned off at an optimal point in time. Furthermore, by examining the duration of the on-time and/or off-time of said Vds voltage during a previous cycle or during the present cycle, the methods and circuits of the present invention can quickly adapt to rapidly changing duty cycles.